

THAT WHICH IS CLAIMED:

1. An apparatus for adhering a plurality of wood pieces into a continuous wood panel from which can be cut a plurality of individual wood panels, said apparatus defining a machine direction and comprising:

- 5                   an infeed station configured to receive the wood pieces such that the wood pieces are oriented in a cross-machine direction;
- an adhesive application station including at least one adhesive applicator configured to apply adhesive to a side of each wood piece; and
- a singulation station positioned in proximity to the infeed station and
- 10 including an engagement mechanism configured to engage only one of the wood pieces oriented in the cross-machine direction at the infeed station and further configured to present the wood piece to the adhesive application station for applying adhesive to the wood piece so that the side of the wood piece to which the adhesive is applied can be adhered to an adjoining wood piece and thereby form at least part of
- 15 the continuous wood panel.

2. An apparatus of Claim 1, wherein the engagement mechanism comprises a gripper assembly that includes at least one gripper having a plurality of fingers configured to open and close about one of the wood pieces.

20                   3. An apparatus of Claim 2, wherein the gripper assembly includes a shaft and the gripper is attached to the shaft, the shaft being rotatable between a first position, wherein the gripper is positioned to grip one of the wood pieces from the infeed station, and a second position, wherein the gripper is positioned to present the

25 wood piece to the adhesive application station for adhesive application.

4. An apparatus of Claim 3, wherein the shaft is further rotatable to a third position, wherein the gripper is positioned to release the wood piece into a crowding station while maintaining orientation of the wood piece in the cross-

30 machine direction.

5. An apparatus of Claim 4, wherein the gripper assembly includes four grippers positioned circumferentially about the shaft.

6. An apparatus of Claim 5, wherein the four grippers are  
5 circumferentially spaced 90° apart, so that any three of the four grippers can be simultaneously, rotatably positioned at the first, second and third positions, respectively, by the shaft.

7. An apparatus of Claim 1, wherein the engagement mechanism  
10 comprises a gripper assembly that includes a plurality of gripper sets and a rotatable shaft, wherein each gripper set includes four grippers arranged circumferentially at 90° intervals around the rotatable shaft and wherein the gripper sets are spaced along a length of the rotatable shaft.

8. An apparatus of Claim 1, wherein the adhesive application station  
15 further includes a gantry beam extending in the cross-machine direction above the singulation station, and the adhesive applicator is mounted on the beam for powered sliding movement in the cross-machine direction along a longitudinal edge of the one of the wood pieces presented by the singulation station for adhesive application.

9. An apparatus of Claim 8, wherein the adhesive applicator is further  
20 mounted for powered vertical movement toward and away from the longitudinal edge of the one of the wood pieces presented by the singulation station for adhesive application.

10. An apparatus of Claim 9, wherein the adhesive applicator is an  
25 adhesive extruder.

11. An apparatus of Claim 1, further comprising a crowding station  
30 positioned downstream from the adhesive application station, the crowding station including an upstream crowding device and a downstream crowding device, the crowding devices configured to move together so as to compress a batch of the wood pieces therebetween.



17. An apparatus of Claim 16, wherein the clamping station further includes a radio frequency curing device for curing the adhesive.

18. An apparatus of Claim 17, further comprising a cutting station  
5 positioned downstream of the press station for cutting the continuous wood panel into individual panels.

19. A rotary transfer mechanism for transferring individual wood pieces  
from an infeed station to a crowding station, and for presenting the individual wood  
10 pieces to an adhesive application station to form a panel, the rotary transfer mechanism comprising:

a rotatable shaft;  
a drive mechanism operably connected to the rotatable shaft; and  
a gripper assembly including a shaft and at least one gripper attached  
15 to the shaft, the shaft being rotatable between a first position, wherein the gripper is positioned to grip one of the wood pieces from the infeed station, and a second position, wherein the gripper is positioned to present the wood piece to the adhesive application station for adhesive application.

20. A rotary transfer mechanism of Claim 19, wherein the gripper includes a plurality of fingers configured to open and close about the wood piece.

21. A rotary transfer mechanism of Claim 19, wherein the shaft is further rotatable to a third position, and wherein the gripper is positioned to release the wood  
25 piece to the crowding station while maintaining orientation of the wood piece in the cross-machine direction.

22. A rotary transfer mechanism of Claim 21 wherein the gripper assembly includes four grippers positioned circumferentially about the shaft.

23. A rotary transfer mechanism of Claim 22, wherein the four grippers are  
30 circumferentially spaced 90° apart, so that any three of the four grippers can be

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simultaneously, rotatably positioned at the first, second and third positions, respectively, by the shaft.

24. A press apparatus for pressing a batch of wood pieces fed from a crowding station and having upstream and downstream edges, the press apparatus comprising:

an upper platen positioned to be downwardly moveable onto the batch of wood pieces; and

a clamping device including a plurality of offset clamping bars each having a portion extending below a lower surface of the upper platen and having attached thereto a respective one of a plurality of clamping blocks, said clamping blocks movable in a downstream direction by actuation of the clamping bars so as to clampingly engage the upstream edge of the batch of wood pieces while the upper platen presses the batch of wood pieces against the lower platen.

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25. A press apparatus of Claim 24, wherein the clamping device further includes a plurality of hydraulic cylinders positioned above the lower surface of the upper platen, the hydraulic cylinders connected to respective ones of the clamping bars and operative to actuate the clamping bars.

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26. A press apparatus of Claim 25, wherein the clamping station further includes a radio frequency curing device for curing the adhesive.

27. A method of adhering wood pieces into a continuous panel from which can be cut a plurality of individual wood panels, said method comprising:

orienting the wood pieces in a cross-machine direction at an infeed station;

engaging only one of the wood pieces oriented in the cross-machine direction at the infeed station;

presenting the wood piece to an adhesive application station;

applying adhesive to a side of the wood piece using an adhesive applicator; and

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surface and onto the upstream edge of the batch by actuating a plurality of clamping bars each ending in one of the plurality of clamping blocks.

35. A method of Claim 34, further comprising curing the adhesive of the clamped batch of wood pieces by radio frequency.

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